Abstracts

Estimation of error vector magnitude using two-tone intermodulation distortion measurements [power amplifier]

In this paper, a new method for estimating error vector magnitude (EVM) degradation of a power amplifier using the intrinsic kernel function derived from two-tone intermodulation distortion (IMD) measurements is presented. The kernel function represents the incremental distortion characteristics of the power amplifier driven by a signal with small amplitude deviation. With a knowledge of the complementary cumulative distribution function (CCDF) of an arbitrary input signal, the Carrier-to-Interference Ratio (CIR) of the power amplifier can be derived and the EVM degradation of the power amplifier may be calculated. For the experimental validation, the EVM of the 16-QAM signals passed through 1.9 GHz HFET nonlinear amplifier is derived by the suggested method and compared with the measured results. The derived EVM shows a good agreement with measured results. The r.m.s. error between the two results over a 20 dB input range is less than 2%.

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